

Remarks

Applicants wish to express their sincere appreciation to Examiner Markoff for the courtesies extended counsel during the extended interview of April 14, 2000.

It is believed that the criticism of the claims has been overcome by the cancellation of Claims 1 through 11 and the amendment of the remaining claims. Newly added Claims 33 through 46 are believed to conform to the requirements of 35 U.S.C. 112 as kindly pointed out by the Examiner.

The Examiner's criticism of Claims 20 and 31 have been overcome with suitable amendments. However the criticism of Claims 19, 23 and 2 (cancelled) is not understood.

Before discussing any reference in detail, Applicants wish to point out the important elements of Claims 12 through 32 and the newly added Claims 33 through 46.

The features that are claimed in Claim 12 for instance include the limitation that the active cleaning liquid composition is a mixture of water and an additional component having hydrophilic and lipophilic groups. But importantly this active cleaning liquid composition must have an immiscibility gap at a selected temperature range capable of forming separate phases. As was pointed out to the Examiner during the interview, the very limitation "immiscibility gap" inherently and necessarily requires that the additional component and water can be neither always miscible nor always immiscible thus ruling out many organic liquid and water combinations as not capable of meeting this important limitation.

Further, it is to be noted that the immiscibility gap occurs at a selected temperature range that permits the forming of separate phases of the composition in the temperature range existing during the contact of the composition with the articles to be cleaned. It must be noted that there is no reference whatsoever to

an "immiscibility gap" in any prior art reference nor any reference to the capability of forming separate phases during the working contact of the composition with the articles.

Another requirement of the invention is the exercise of the foregoing capability by establishing the separate phases of the composition within the immiscibility gap. Thus the two liquids are immiscible at the temperature range of the contact with the articles but forming such separate phases of the liquid composition has been found alone not to perform the superior cleaning in accordance with the present invention.

Accordingly, the present invention requires the forming of an emulsion of the composition while it is immiscible and with the separate phases established within the temperature range.

The forming of this emulsion is a significant and very important aspect of the invention because the physical form of the liquid composition is changed. The

formed emulsion is clearly to be differentiated from either an organic solvent alone or any other organic liquid in a separate phase with or without water. The physical form of the emulsion as small globules that do not coalesce because of their immiscibility permits these globules of the additional component (an organic liquid) with water to be more able to attract lipophilic contaminants and hydrophilic contaminants respectively. The operative theory behind the success of the cleaning of the present invention is not suggested in the cited prior art for the simple reason that it is not possible for the such prior art processes to perform according to the present theory without an emulsion being present.

Nowhere in the cited prior art is there even any suggestion of an emulsion being necessary to be formed to effect such superior cleaning.

It should be noted that it is not critical how this emulsion is formed, whether it is by ultrasound,

intensive movement or other forms of agitation. It is only important that the emulsion be formed.

Additional claims specify that the emulsion is formed by agitation, which broadly would include ultrasound and any other sustained intensive movement that creates and maintains the emulsion.

Thereafter the articles are cleaned by contact with the emulsion, while the immiscibility gap persists, in order to remove the lipid and ionic fouling substances from the articles as specifically claimed.

The claims have been rejected under 35 U.S.C. 102 as being anticipated by EPA 475596.

EPA 475596 discloses a cleaning process wherein a dirty article is contacted with a solvent without water under conditions that result not only in cleaning of dirt from the article but also in undesirable solvent contamination of the article. The solvent contamination is removed by contacting the contaminated article at an elevated temperature with an aqueous medium. The solvent contamination is thus evaporated to form an

azeotrope with the aqueous medium. The solvent is immiscible with the aqueous medium. The azeotrope is then condensed and the organic solvent phase is separated and is recycled for subsequent cleaning of a dirty article.

It is stated in column 4 of EPA 475596 that the water and the solvent can be miscible. Therefore immiscibility, which is important to the present invention, is not only not critical to the patented process but not even important.

The articles to be cleaned according to the patented process must also remove the "results of the cleaning", i.e., the solvent contamination. They are thus contacted with vaporized solvent in the presence of steam vapor.

Nowhere is it stated that an emulsion is formed and that such an emulsion, not a vapor, should contact the articles to be cleaned. To the contrary, the contact of the articles is preferably by immersion in a liquid solvent (see col. 6, lines 18 and 19) without water.

While agitation of the solvent is suggested, it is only agitation of the solvent and not of a solvent and water which, most importantly, could not form the emulsion that is important to the present invention. As explicitly set forth in Example 1 on col. 8 of the patent, the articles are cleaned by subjecting them to vapor contact with the solvent so that the solvent can condense on the article.

It is further stated in accordance with the patented method, that ultrasonic agitation is of the solvent only (see col. 8, lines 20 et seq.). Of course, there can be no emulsion when the liquid is only the solvent.

The Examiner's comments in rejecting Claims 31 and 32 is that "numerous organic compounds would have this general formula". That is true Applicants concede. However, the examples cited by the Examiner do not have an immiscibility gap capable of forming an emulsion by agitation within the temperature range for cleaning the articles.

The claims are also rejected under 35 U.S.C. 102 as being anticipated by WO 96/28535, published after the instant priority.

The Examiner has, in Applicants' opinion, correctly noted that the disclosure of WO 96/28535 does not state that the patented composition is an emulsion. The Examiner then states that because the cleaning "is conducted at the same temperature at which the phase separation occurs it is inherent that the composition is an emulsion". No support for this claim of inherency is presented by the Examiner and such contention is, Applicants respectfully urge, not well founded.

Without a clear statement that an emulsion is formed or even desirable, none should be presumed. However, the disclosure in the patent strongly belies the conclusion that an emulsion is inherent in view of the fact that on page 3, lines 6-8 of the patent, it states that an emulsion can only occur when the water percentage is greater than its solubility in the organic solvent. This condition is not required,

inherent, or even suggested to be useful for cleaning. The existence of an emulsion therefore is not supportable. It must also be noted that no agitation is mentioned to produce any emulsion for the obvious reason that an emulsion is not required.

Further, there is no mention in this patented disclosure of an immiscibility gap at the temperature of the contact with the articles.

Nor is there any mention of the forming of separate phases from which agitation could form an emulsion. It must be noted that the separate phases mentioned in the patented disclosure occur only after the azeotropic distillation is achieved and then only to recycle the separated liquids.

There is no separation of the liquids due to the immiscibility gap from which an emulsion could be formed by agitation that then is contacted with the dirty articles.

It is manifest that the above claimed elements of the present invention are not present in the cited reference.

As to the rejection of Claims 31 and 32, the foregoing comments with respect to these claims also apply to the rejection based upon WO 96/28535.

To summarize:

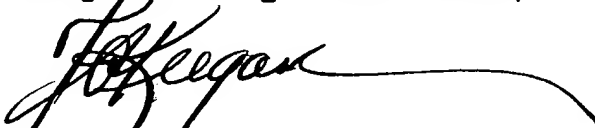
In both prior art documents the immiscibility of two phases is used for separating their phases but not for improving any cleaning performance. None of the documents discloses or even hints a liquid cleaning process using a cleaning liquid being a mixture of water and at least one additional component with molecules having hydrophilic and lipophilic groups and having an immiscibility gap with water, wherein the cleaning liquid is used within the immiscibility gap to perform the liquid cleaning.

It is therefore maintained that EPA 475596 and WO 96/28535 fail to suggest

- a) either the importance or existence of an immiscibility gap at the temperature of the cleaning,
- b) the capability of forming separate phases at the temperature of cleaning,
- c) establishing the separate phases within the immiscibility gap,
- d) forming an emulsion while the composition is immiscible within the temperature range or
- e) using agitation to form an emulsion.

In view of the foregoing, it is believed that all claims are now patentable and such action is earnestly solicited.

Respectfully submitted,



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